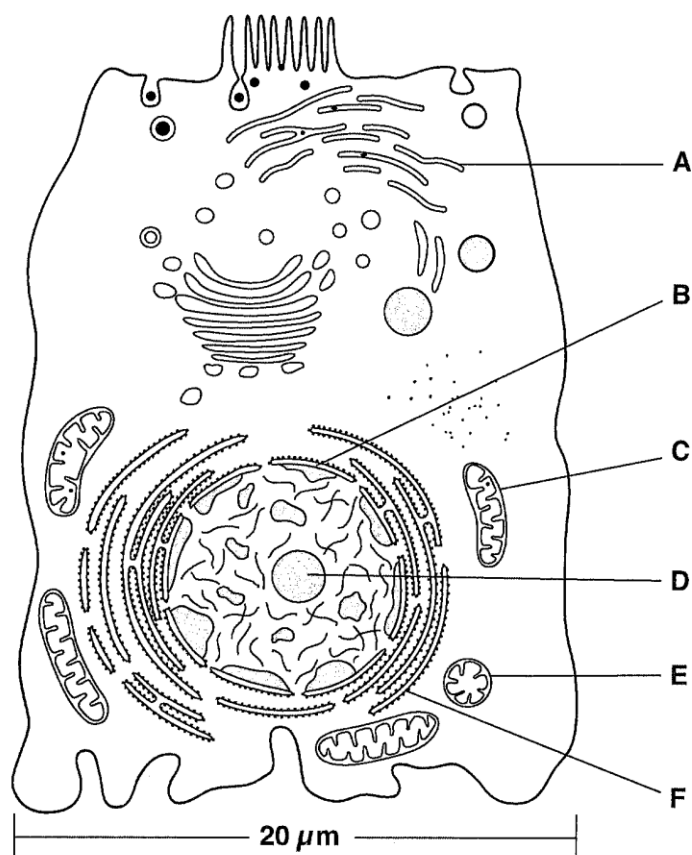


**1**

Fig. 1.1 is a diagram of an animal cell as seen using a transmission electron microscope.



**Fig. 1.1**

(a) (i) Name the structures of the cell labelled **A**, **B**, **C** and **D**.

**A** .....

**B** .....

**C** .....

**D** ..... [4]

(ii) Structures **C** and **E** are examples of the same organelle.  
Suggest why **E** looks so different to **C**.

.....  
 .....  
 .....  
 ..... [2]

- (iii) Calculate the actual length of structure **C**.

Show your working and give your answer in micrometres ( $\mu\text{m}$ ).

Answer = .....  $\mu\text{m}$  [2]

- (b) Proteins are produced by the structure labelled **F**. Some of these proteins may be **extracellular** proteins that are released from the cell.

Outline the sequence of events following the production of extracellular proteins that leads to their release from the cell.

.....

.....

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 11]

- 2 Fig. 4.1 shows diagrams of two different types of cells, **X** and **Y**.

The cells are **not** drawn to scale.

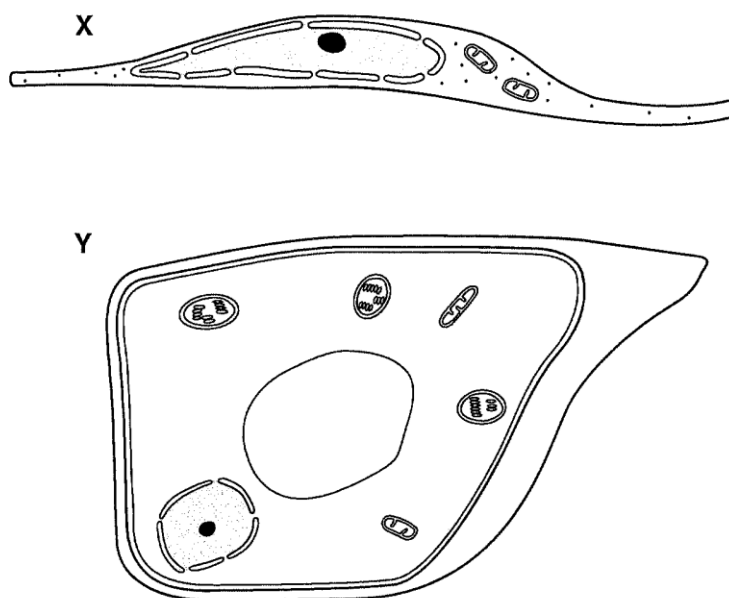


Fig. 4.1

- (a) (i) State, using **only the information in Fig. 4.1**, two **differences** between plant cells and animal cells.

1 .....

.....

2 .....

..... [2]

- (ii) Cell **Y** is a guard cell.

State, using **only the information in Fig. 4.1**, one adaptation of this cell and explain how the adaptation allows the cell to carry out its function.

adaptation .....

explanation .....

.....

..... [2]

[Total: 4]

- 3 (a) Table 4.1 compares the structures of prokaryotic and eukaryotic cells.

Complete the table.

Table 4.1

prokaryotic	eukaryotic
no true nucleus	genetic material held in a nucleus
genetic material consists of 'naked' DNA	
average diameter of cell 0.5 – 5 µm	
	ribosomes about 22 nm in diameter
	cell wall sometimes present

[4]

- (b) The cytoskeleton is an important component in the cytoplasm of all eukaryotic cells.

- (i) Name **one** structure, **associated with the cytoskeleton**, which can bring about cell movement.

..... [1]

- (ii) Suggest **two** processes **inside cells** that rely on the cytoskeleton for movement.

.....  
.....  
.....  
..... [2]

[Total: 7]

**4**

(a) Fig. 1.1, **on the insert**, shows an electron micrograph of cells from the liver.

(i) Some cells, such as liver cells, contain a lot of Golgi apparatus.

State **one** function of the Golgi apparatus.

.....  
.....  
..... [1]

(ii) Suggest why the nuclear envelope contains pores.

.....  
.....  
.....  
.....  
..... [2]

(iii) State the function of the lysosomes.

.....  
.....  
..... [1]

(b) The liver is an organ.

Explain what is meant by the term *organ*.

.....  
.....  
.....  
.....  
..... [2]

**[Total: 6]**

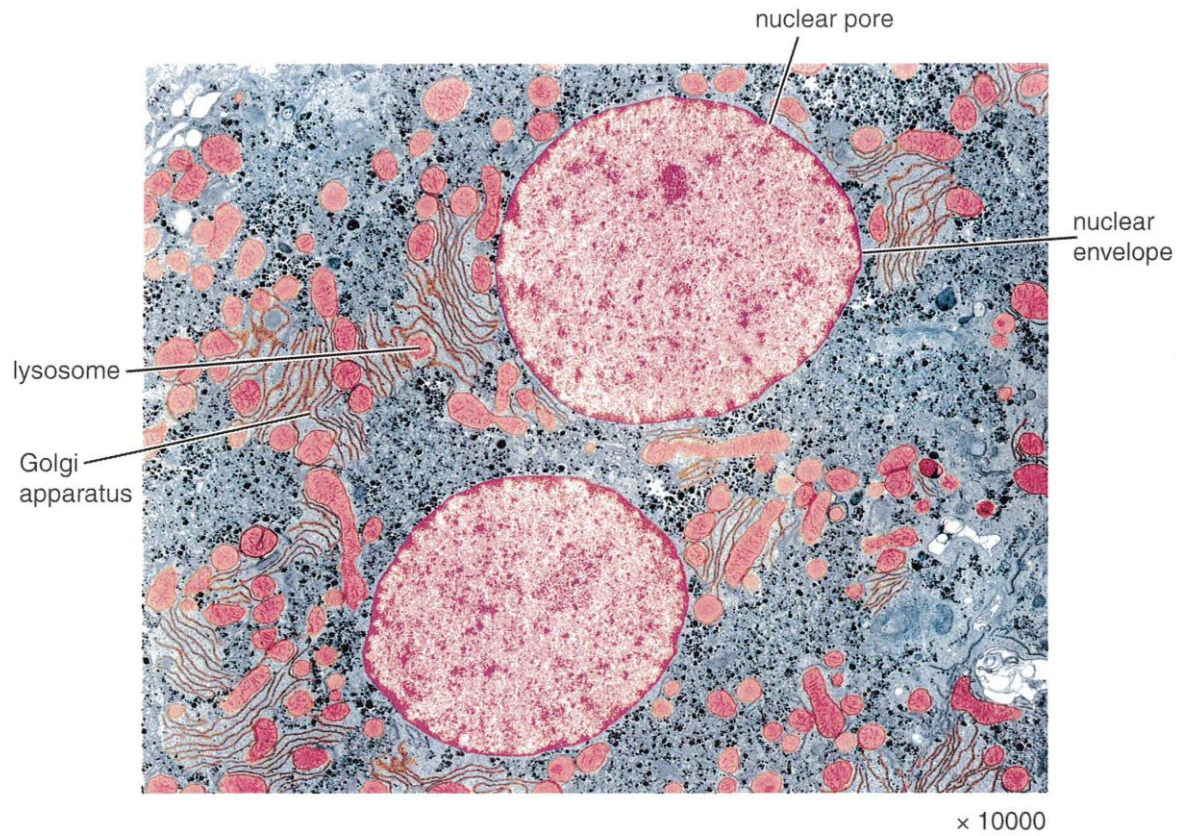


Fig. 1.1

**5** (a) Fig. 5.1 is provided for you **on the insert**.

(i) State **two** features of the cell shown in Fig. 5.1 that indicate it is eukaryotic.

.....

.....

.....

..... [2]

(ii) The line **A–B** on Fig. 5.1 represents 20  $\mu\text{m}$ .

Calculate the magnification of the cell shown in Fig. 5.1.

Show your working.

Answer = ..... x [2]

(iii) Microtubules and microfilaments are part of the cytoskeleton.

Suggest **two** roles of the cytoskeleton in the type of cell shown in Fig. 5.1.

.....

.....

.....

.....

..... [2]

(b) The cells of a multicellular organism are usually specialised to perform a particular function.

(i) Name the process in which a cell becomes specialised.

..... [1]

**[Total: 7]**

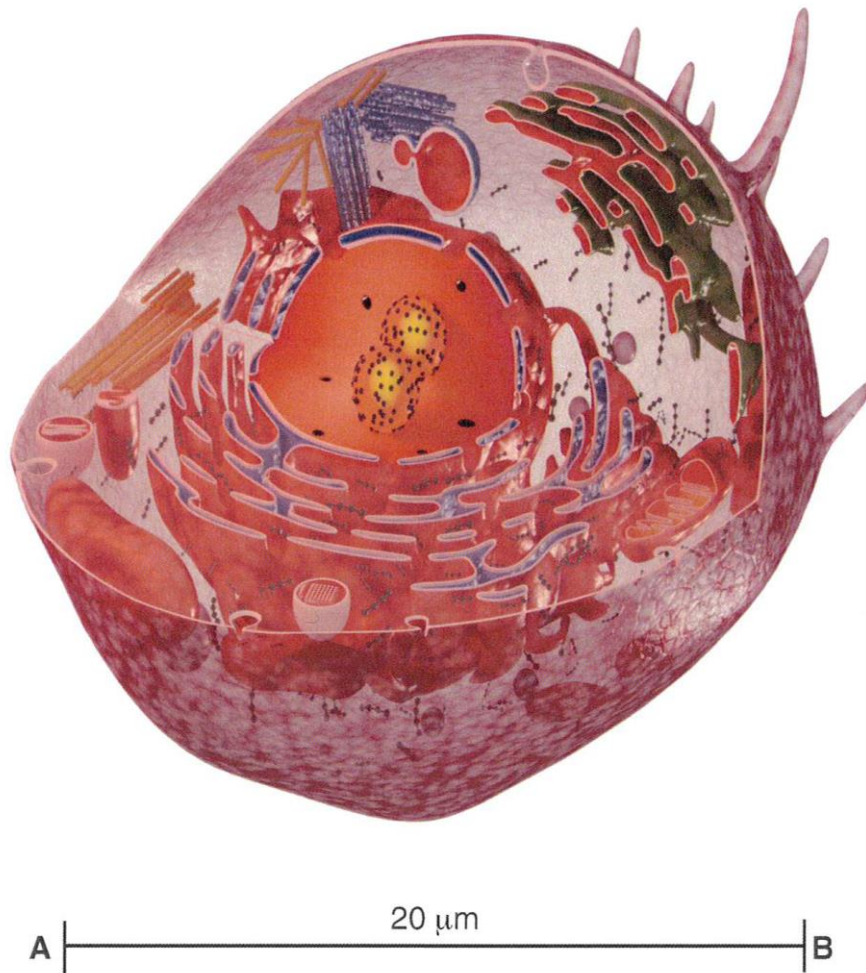


Fig. 5.1



**6** The use of microscopy has greatly enhanced our knowledge of cell structure.

**(a)** Explain the difference between *magnification* and *resolution*.

.....

.....

.....

.....

.....

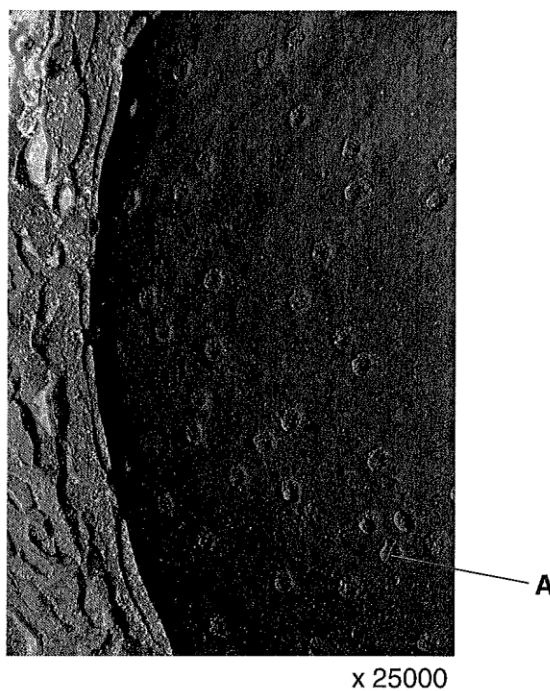
..... [2]

**(b)** State the resolution that can be achieved by each of the following types of microscope.

light microscope .....

transmission electron microscope ..... [2]

**(c)** Fig. 4.1 is an electron micrograph showing part of a nucleus.



**Fig. 4.1**

- (i) A student stated that Fig. 4.1 was taken using a scanning electron microscope.

What evidence supports the student's statement?

.....  
.....  
.....  
..... [1]

- (ii) On Fig. 4.1, the nuclear pore complex, labelled **A**, is 3 mm wide.

Calculate the actual diameter of the pore, in nanometres.

Answer = ..... nm [2]

- (iii) State the function of the nuclear pores.

.....  
.....  
..... [1]

- (d) State **two** features of a eukaryotic cell, other than nuclear pores, that would **not** be visible using medium power of a light microscope.

.....  
..... [2]

[Total: 10]